

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

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1. (Currently Amended) An image scanning apparatus comprising:
a light source for emitting visible light and invisible light;
scanning means for scanning an original image irradiated with light emitted by
said light source; and
control means for controlling said scanning means to scan the original image
irradiated with the invisible light, and then to scan the original image irradiated with the visible
light,
wherein when the original image is irradiated with the visible light, the original
image is scanned in a rough scan for roughly scanning the original image, and in a fine scan for
scanning the original image under a required condition on the basis of information scanned in the
rough scan.

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2. (Cancelled)
3. (Currently Amended) The apparatus according to claim 1, wherein said
control means controls said scanning means to make the rough scan after said scanning means
scans the original image irradiated with the invisible light, and then to make the fine scan.

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4. (Currently Amended) The apparatus according to claim 1, wherein said
control means controls said scanning means to scan the original image irradiated with the
invisible light after the rough scan, and then to make the fine scan.

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506 B1 > 4 f. (Original) The apparatus according to claim 1, further comprising detection means for detecting abnormality on an original by scanning the original image irradiated with the invisible light.

5 f. (Original) The apparatus according to claim 5, wherein the abnormality on the original is caused by dust or scratches on the original.

6 7. (Original) The apparatus according to claim 5, further comprising signal processing means for, when said detection means detects the abnormality, executing signal processing for correcting an influence of the abnormality from the image signal output from said scanning means.

7 8. (Original) The apparatus according to claim 1, wherein the invisible light is infrared light.

A1 8 9. (Currently Amended) An image scanning method comprising:
the scanning step of scanning, by scanning means, an original image irradiated with light emitted by a light source which emits visible light and invisible light; and
the control step of controlling said scanning means to scan the original image irradiated with the invisible light, and then to scan the original image irradiated with the visible light,
wherein when the original image is irradiated with the visible light, the original image is scanned in a rough scan for roughly scanning the original image, and in a fine scan for scanning the original image under a required condition on the basis of information scanned in the rough scan.

⁹ 10. (Currently Amended) A storage medium storing a computer program for scanning image information ~~on an~~ of a transparent original, said computer program including:

a code of the step of scanning the image information by irradiating the transparent original with invisible light; ~~and~~

a code of the step of then scanning the image information by irradiating the transparent original with visible light; and

a code of the step of then performing a rough scan for roughly scanning the image information, and then a fine scan for scanning the image information under a required condition on the basis of information scanned in the rough scan.

¹⁰ 11. (Original) An image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and photodetection means for detecting light transmitted through the transparent original, comprising:

emission means for emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original; and

control means for controlling to scan image information from the transparent original by the light in the first wavelength range in a motion in one direction of the reciprocal motion, and to scan image information from the transparent original by the light in the second wavelength range in a motion in the other direction of the reciprocal motion.

¹¹ 12. (Original) The apparatus according to claim ¹⁰ 11, wherein the transparent original is an original such as a developed photographic film or the like, the light in the first wavelength range is visible light, and the light in the second wavelength range is infrared light.

¹²13. (Original) The apparatus according to claim ¹⁰11, wherein said control means controls to scan image information from the transparent original by a rough scan for obtaining rough image information of the transparent original by visible light, a fine scan for obtaining image information of the transparent original by visible light with designated image quality, or an infrared light scan for obtaining image information of the transparent original by infrared light.

¹³14. (Original) The apparatus according to claim ¹²13, wherein said control means controls to make the infrared light scan in one of two reciprocal motions for respectively making the rough scan and fine scan.

¹⁴15. (Original) The apparatus according to claim ¹³14, wherein said control means controls to make the infrared light scan in the motion in one direction of the reciprocal motion for making the rough scan.

¹⁵16. (Original) The apparatus according to claim ¹³14, wherein said control means controls to make the infrared light scan in the motion in one direction of the reciprocal motion for making the fine scan.

¹⁹17. (Original) An image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and optical detection means for detecting light transmitted through the transparent original, comprising:

emission means for emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original; and

control means for controlling to scan image information from the transparent original,

wherein an operation mode that skips a scan for image information by the light in the second wavelength range upon scanning the image information of the transparent original is selectable.

¹⁶18. (Original) The apparatus according to claim ¹⁰11, further comprising light-shielding means, placed on a light incoming side of the photodetection means, for cutting the light in the second wavelength range, and wherein said control means controls said light-shielding means to be retractable from a position on an optical axis.

¹⁷19. (Original) The apparatus according to claim ¹⁰11, further comprising a physical device which is placed on a light incoming side of the photodetection means, and can control transmittances of the light in the first wavelength range and the light in the second wavelength range, and wherein said control means controls spectral transmission characteristics of said physical device.

¹⁸20. (Original) The apparatus according to claim ¹⁰11, wherein said emission means comprises a first emission section for emitting the light in the first wavelength range, and a second emission section for emitting the light in the second wavelength range, and said control means controls to turn on/off said first and second emission sections of said emission means.

²⁰21. (Original) An image scanning method applied to an image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and photodetection means for detecting light transmitted through the transparent original, comprising:

the emission step of emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original; and

the control step of controlling to scan image information from the transparent original by the light in the first wavelength range in a motion in one direction of the reciprocal motion, and to scan image information from the transparent original by the light in the second wavelength range in a motion in the other direction of the reciprocal motion.

²¹ 22. (Original) An image scanning method applied to an image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and photodetection means for detecting light transmitted through the transparent original, comprising:

the emission step of emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original; and

A 1 the control step of controlling to scan image information from the transparent original,

wherein an operation mode that skips a scan for image information by the light in the second wavelength range upon scanning the image information of the transparent original is selectable.

²² 23. (Original) A computer readable storage medium, which stores a program for implementing an image scanning method applied to an image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and photodetection means for detecting light transmitted through the transparent original,

said image scanning method having the emission step of emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original, and the control step of controlling to scan image information from the transparent original by the

light in the first wavelength range in a motion in one direction of the reciprocal motion, and to scan image information from the transparent original by the light in the second wavelength range in a motion in the other direction of the reciprocal motion.

²³ 24. (Original) A computer readable storage medium, which stores a program for implementing an image scanning method applied to an image scanning apparatus for scanning image information of a transparent original by a relative reciprocal motion between the transparent original and photodetection means for detecting light transmitted through the transparent original,

said image scanning method having the emission step of emitting light in a first wavelength range and light in a second wavelength range with respect to the transparent original, and the control step of controlling to scan image information from the transparent original, wherein an operation mode that skips a scan for image information by the light in the second wavelength range upon scanning the image information of the transparent original is selectable.

²⁴ 25. (Original) An image scanning apparatus for scanning image information on an original by a relative reciprocal motion between the original and a line sensor, comprising:

scan means for making three types of scans including a rough scan for scanning the image information by visible light at a low resolution, a fine scan for scanning the image information by visible light at a high resolution, and an invisible light scan for scanning the image information by invisible light,

wherein said scan means makes the invisible light scan at a lower resolution than the fine scan.

²⁵ 26. (Original) The apparatus according to claim ²⁴ 25, wherein the invisible light scan is to scan dust or scratch information on the original.

²⁶~~27~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein said scan means makes the rough scan in a motion in one direction of the reciprocal motion, and makes the invisible light scan in a motion in the other direction of the reciprocal motion.

²⁷~~28~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein said scan means simultaneously makes the rough scan and invisible light scan in a motion in one direction of the reciprocal motion.

²⁸~~29~~. (Original) The apparatus according to claim ²⁷~~28~~, wherein said scan means makes the fine scan in a motion in the other direction of the reciprocal motion.

²⁹~~30~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein said scan means has a mode for skipping the invisible light scan, and the mode is selectable.

³⁰~~31~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein the invisible light is infrared light.

³¹~~32~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein the original is a film original.

³²~~33~~. (Original) The apparatus according to claim ²⁴~~25~~, wherein the original is a transparent original.

³³~~34~~. (Original) An image scanning method for scanning image information on an original, comprising:

the rough scan step of scanning the image information by visible light at a low resolution;

the fine scan step of scanning the image information by visible light at a high resolution;

the invisible scan step of scanning the image information by invisible light at a lower resolution than the resolution in the fine scan step.

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35. (Original) A storage medium storing a computer program for scanning image information on an original, said computer program including:

a code of the rough scan step of scanning the image information by visible light at a low resolution;

a code of the fine scan step of scanning the image information by visible light at a high resolution;

a code of the invisible scan step of scanning the image information by invisible light at a lower resolution than the resolution in the fine scan step.

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36. (Original) An image scanning apparatus for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, comprising:

emission means for emitting visible light and invisible light; and

scan means for making two types of scans including a visible light scan for scanning the image information by visible light, and an invisible light scan for scanning the image information by invisible light,

wherein said scan means completes the invisible light scan within a shorter period of time than the visible light scan.

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37. (Original) An image scanning apparatus for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, comprising:

emission means for emitting visible light and invisible light; and

scan means for making two types of scans including a visible light scan for scanning the image information by visible light, and an invisible light scan for scanning the image information by invisible light,

wherein said scan means makes the invisible light scan by a relative motion at a higher speed than a relative motion for the visible light scan.

³⁶~~38~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein an output signal level of the line sensor in the invisible light scan is lower than an output signal level in the visible light scan.

³⁷~~39~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein spectral intensity characteristics of said emission means have a higher emission intensity in an invisible light wavelength range than an emission intensity in a visible light wavelength range.

³⁸~~40~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein spectral sensitivity characteristics of the line sensor have a higher- sensitivity in an invisible light wavelength range than a sensitivity in a visible light wavelength range.

³⁹~~41~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein said scan means has a mode for skipping the invisible light scan, and the mode is selectable.

⁴⁰~~42~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein the invisible light is infrared light.

⁴¹~~43~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein the original is a film original.

⁴²~~44~~. (Original) The apparatus according to claim ³⁵~~36~~, wherein the original is a transparent original.

44/45. (Original) An image scanning method for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, comprising:

the visible light scan step of making a scan by the relative motion using visible light; and

the invisible light scan step of making a scan using invisible light within a shorter period of time than the visible light scan step.

45/46. (Original) An image scanning method for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, comprising:

A the visible light scan step of making a scan by the relative motion using visible light; and

the invisible light scan step of making a scan using invisible light by a relative motion at higher speed than a relative motion for the visible light scan step.

46/47. (Original) A storage medium storing a computer program for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, said computer program including:

a code of the visible light scan step of making a scan by the relative motion using visible light; and

a code of the invisible light scan step of making a scan using invisible light within a shorter period of time than the visible light scan step.

47/48. (Original) A storage medium storing a computer program for scanning image information on an original by a scan attained by a relative motion between the original and a line sensor, said computer program including:

a code of the visible light scan step of making a scan by the relative motion using visible light; and

a code of the invisible light scan step of making a scan using invisible light by a relative motion at higher speed than a relative motion for the visible light scan step.
